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NOTES AND LITERATURE.

GENERAL BIOLOGY.

Arnold's Sea Beach at Ebb Tide.[1] — This is the type of book which one wishes had been written years ago. Every one will recall his struggles when he first began seashore collecting; the vain attempts to identify the specimens found and in some cases even to ascertain the relationship of certain forms. Such a volume as this would have lightened the labors and have given additional pleasure to a trip to the shore. Although late in coming, it is none the less welcome and will doubtless be of great value to many beginners. The tendency of the past dozen years has been to stand in morphological and physiological lines, and the systematic side of biology has been too much neglected.

This volume simplifies many of the collector's difficulties, for with simple descriptions and characteristic figures it enables one to recognize a large number of the animals and plants found on the American coasts from Mt. Desert to Florida ; from Puget Sound to San Diego. It begins with hints on collecting and preserving specimens and then takes up, in systematic order, the algæ, sponges, cœlenterates, worms, molluscoids, echinoderms, arthropods, mollusks, and tunicates, describing and usually figuring the more common species. Each of these groups has a section or chapter devoted to it, and the descriptions are prefaced by an outline of the morphology, life-history, and economic relations of the group.

In looking more closely at the text one notices certain blemishes which are almost unavoidable in a work of such large scope and which will doubtless disappear in future editions, for future editions there will certainly be. Thus in the chapter on collecting there should be directions for killing the animals properly, and there certainly should be some hints as to the use of formal as a preserving fluid. Again, there is noticeable a lack of symmetry in terminology. Thus among the decapods we find that Gelasimus has given way to

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[1] Arnold, Augusta Foote. *The Sea Beach at Ebb Tide*, a guide to the study of the seaweeds and the lower forms of animal life found between tide marks, with more than 600 illustrations. New York, The Century Company, 1901. x + 490 pp.

Uca, while Homarus remains ; in the mollusk the latest vagaries of the systematist are introduced, while in the worms a more conservative course has been adopted. Here and there errors occur. Thus the nemertines are regarded as a class of Plathelminthes, and (p. 164) the flatworms are stated to lack an anus. Under the Gephyræa, *Sipunculus nudus* is included as an American form, while Echiurus and Thalassema are ignored. Yet these are minor blemishes, and the work will prove most useful not only to the casual visitor to the shore but to the more experienced naturalist as well.

K.

PHYSIOLOGY.

Reactions of Hydra to an Electric Current. — Pearl[1] has observed that *Hydra viridis*, when attached by the foot and placed in the path of a constant current of weak intensity, brings the long axis of the body in line with the current, the oral end being toward the anode. This orientation is accomplished by a contraction on the anode side of the body. When the animal is not attached by the foot, the anode side still remains the side of contraction, even though the oral end may be turned toward the cathode. In addition to orientation, the current may call forth general contractions. Separate pieces of the hydra react in much the same way as whole animals. Buds and parent animals are independent in their reactions, the buds showing essentially the same reactions as adults.

P.

Evolution of Pigment. — The interest which biologists have shown in the chemical activities of protoplasm has evinced itself in the study of pigment as a protoplasmic product. Bohn's[2] contribution to this subject is a timely *résumé* of some of the more important recent results. The pigments are classified as hydrocarbons, derivatives of chromatin, and derivatives of the aromatic series. The vegetable pigments are described under the heads of chromogenic bacteria and chloroleucites. The occurrence, migration, and transformation of animal pigments occupies much of the volume. The author believes that in a given cell there may be a struggle between

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[1] Pearl, R. The Reactions of Hydra to the Constant Current, *Amer. Journ. Physiol.*, vol. v (1901), pp. 301–320.

[2] Bohn, G. *L'Évolution du Pigment.* Paris, Carré et Naud, 1901. 96 pp.